

Reference 51

The State of Texas Water Quality Inventory

SURFACE WATER QUALITY MONITORING PROGRAM

13th Edition, 1996 • Prepared Pursuant to Section 305(b) Federal Clean Water Act

96

Basin Summaries,
Basin Maps, Graphical
Basin Summaries,
Segment Fact Sheets,
and Water Quality
Status Tables (Basins 21 - 25)

4

VOLUME
FOUR

SFR-50 ♦ 12/96

THE STATE OF TEXAS WATER QUALITY INVENTORY

**13th Edition
1996**

**Prepared Pursuant to
SECTION 305(b)
FEDERAL CLEAN WATER ACT**

VOLUME 4

**Basin Summaries, Graphical Basin Summaries,
Basin Maps, Segment Fact Sheets and
Water Quality Status Tables (Basins 21-25)**

by the

Texas Natural Resource Conservation Commission

December 1996



Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*

Dan Pearson, *Executive Director*

Authorization for use or reproduction of any original material contained in this publication, i.e., not obtained from other sources, is freely granted. The Commission would appreciate acknowledgement.

Published and distributed
by the
Texas Natural Resource Conservation Commission
Post Office Box 13087
Austin, Texas 78711-3087

The TNRCC is an equal opportunity/affirmative action employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation or veteran status. In compliance with the Americans with Disabilities Act, this document may be requested in alternate formats by contacting the TNRCC at (512)239-0010, Fax 239-0055, or 1-800-RELAY-TX (TDD), or by writing P.O. Box 13087, Austin, TX 78711-3087.

FOREWORD

The 13th Edition (1996) of the State of Texas Water Quality Inventory Report includes presentation and screening of historical field measurements, water chemistry data, and data regarding toxic substances in water, sediments, and fish tissue. Including these data in the report provides a comprehensive information resource that permits an evaluation of the status of and trends in water quality statewide. However, including status tables for water quality, sediment quality, and tissue quality for each stream, reservoir, and bay segment for which historical data are available greatly adds to the size of the report. For this reason, the 13th Edition of the report is divided into four volumes to permit easier handling and review:

- Volume 1:** Surface and Groundwater Assessments and TNRCC Water Quality Management Programs
- Volume 2:** Basin Summaries, Graphical Basin Summaries, Basin Maps, Segment Fact Sheets, and Water Quality Status Tables (Basins 1-10)
- Volume 3:** Basin Summaries, Graphical Basin Summaries, Basin Maps, Segment Fact Sheets, and Water Quality Status Tables (Basins 11-20)
- Volume 4:** Basin Summaries, Graphical Basin Summaries, Basin Maps, Segment Fact Sheets, and Water Quality Status Tables (Basins 21-25)

Acronyms are used throughout the report to reduce its overall volume. Beginning with the Executive Summary, each acronym is identified in parentheses, following the complete spelling of the term, at its first usage and is not normally repeated afterward. A complete listing of all acronyms used in the report is provided in Appendix A of Volume 1.

Single copies of each volume of the report may be obtained free of charge from the TNRCC's Public Information and Publications Division (Phone: 512/239-0028; FAX: 512/239-4488).

TABLE OF CONTENTS

VOLUME 4

Basin Summaries, Graphical Basin Summaries, Basin Maps,
Segment Fact Sheets, and Water Quality Status Tables (Basins 21-25)

	Page
FOREWARD	iii
EXPLANATION OF BASIN/SEGMENT INFORMATION	1
Narrative Basin Summary	1
Graphical Basin Summary	1
Basin Map	1
Segment Fact Sheets	1
Name and Description	1
Length/Surface Area	2
Segment Classification	2
Designated Water Uses	2
Use Attainability Analysis	2
Stations Monitored in the Last Four Years	2
Published Studies	3
Ambient Toxicity Monitoring Stations	3
Summary of Fish Kills	3
Fish Consumption Advisories and/or Closures	4
Permitted Facilities	4
Segment Summary	4
Water Quality Status Tables	4

TABLE OF CONTENTS CONTINUED

VOLUME 4

	Page
Nueces River Basin	7
Segment 2101: Nueces River Tidal	11
Segment 2102: Nueces River below Lake Corpus Christi	16
Segment 2103: Lake Corpus Christi	19
Segment 2104: Nueces River above Frio River	21
Segment 2105: Nueces River above Holland Dam	23
Segment 2106: Nueces/Lower Frio River	26
Segment 2107: Atascosa River	30
Segment 2108: San Miguel Creek	33
Segment 2109: Leona River	35
Segment 2110: Lower Sabinal River	38
Segment 2111: Upper Sabinal River	40
Segment 2112: Upper Nueces River	46
Segment 2113: Upper Frio River	52
Segment 2114: Hondo Creek	56
Segment 2115: Seco Creek	60
Segment 2116: Choke Canyon Reservoir	65
Segment 2117: Frio River above Choke Canyon Reservoir	67
Nueces-Río Grande Coastal Basin	69
Segment 2201: Arroyo Colorado Tidal	73
Segment 2202: Arroyo Colorado above Tidal	88

TABLE OF CONTENTS CONTINUED

VOLUME 4

	Page
Segment 2203: Petronila Creek Tidal	110
Segment 2204: Petronila Creek above Tidal	113
Rio Grande Basin	115
Segment 2301: Rio Grande Tidal	119
Segment 2302: Rio Grande below Falcon Reservoir	134
Segment 2303: International Falcon Reservoir	154
Segment 2304: Rio Grande below Amistad Reservoir	173
Segment 2305: International Amistad Reservoir	194
Segment 2306: Rio Grande above Amistad Reservoir	204
Segment 2307: Rio Grande below Riverside Diversion Dam	224
Segment 2308: Rio Grande below International Dam	244
Segment 2309: Devils River	264
Segment 2310: Lower Pecos River	284
Segment 2311: Upper Pecos River	304
Segment 2312: Red Bluff Reservoir	308
Segment 2313: San Felipe Creek	313
Segment 2314: Rio Grande above International Dam	333
Bays and Estuaries	357
Segment 2411: Sabine Pass	363
Segment 2412: Sabine Lake	368
Segment 2421: Upper Galveston Bay	376

TABLE OF CONTENTS CONTINUED

VOLUME 4

	Page
Segment 2422: Trinity Bay	386
Segment 2423: East Bay	396
Segment 2424: West Bay	402
Segment 2425: Clear Lake	408
Segment 2426: Tabbs Bay	414
Segment 2427: San Jacinto Bay	418
Segment 2428: Black Duck Bay	421
Segment 2429: Scott Bay	423
Segment 2430: Burnett Bay	425
Segment 2431: Moses Lake	429
Segment 2432: Chocolate Bay	434
Segment 2433: Bastrop Bay/Oyster Lake	437
Segment 2434: Christmas Bay	440
Segment 2435: Drum Bay	450
Segment 2436: Barbours Cut	454
Segment 2437: Texas City Ship Channel	456
Segment 2438: Bayport Channel	462
Segment 2439: Lower Galveston Bay	465
Segment 2441: East Matagorda Bay	483
Segment 2442: Cedar Lakes	486
Segment 2451: Matagorda Bay/Powderhorn Lake	491

TABLE OF CONTENTS CONTINUED

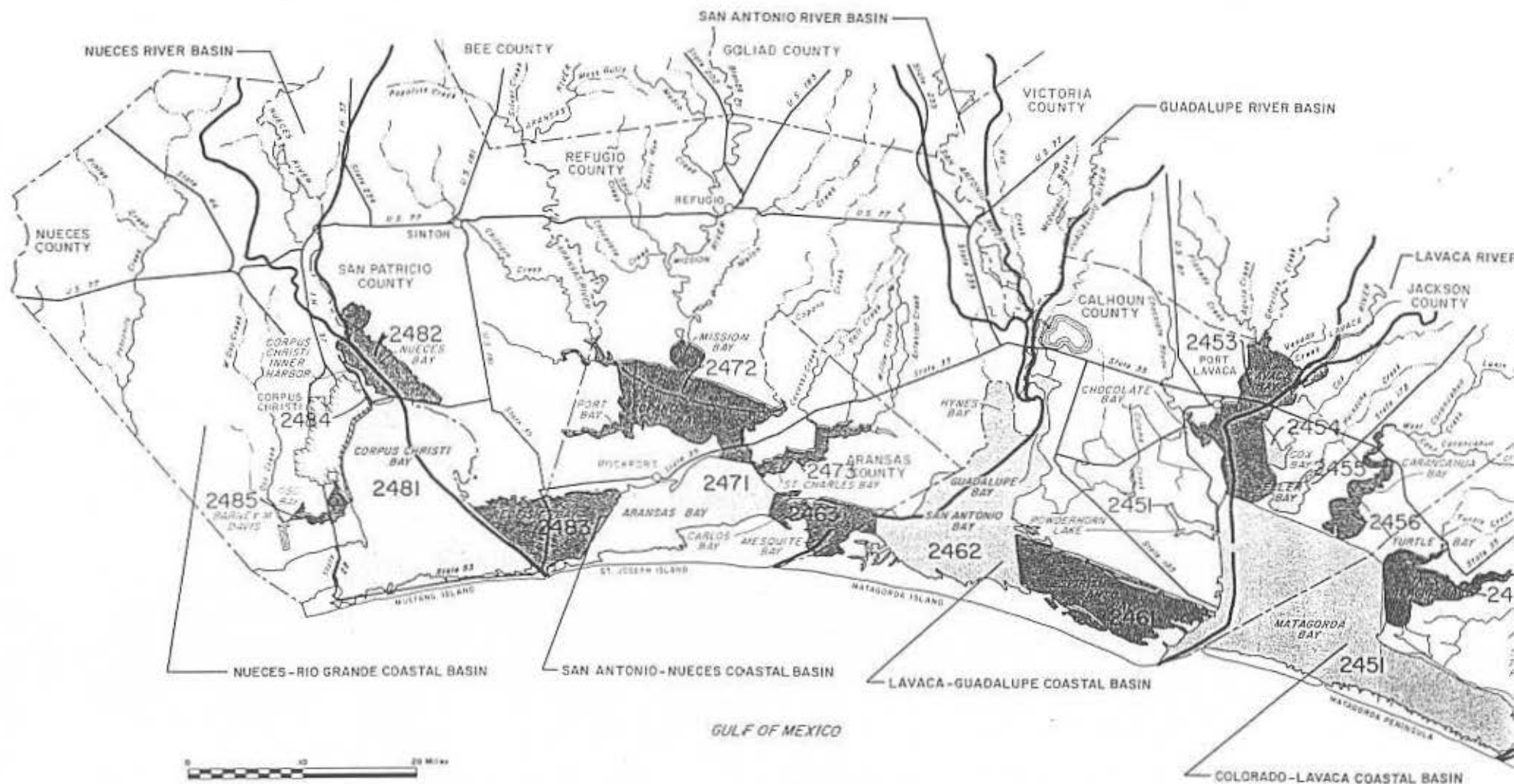
VOLUME 4

	Page
Segment 2452: Tres Palacios Bay/Turtle Bay	496
Segment 2453: Lavaca Bay/Chocolate Bay	499
Segment 2454: Cox Bay	515
Segment 2455: Keller Bay	519
Segment 2456: Carancahua Bay	523
Segment 2461: Espiritu Santo Bay	526
Segment 2462: San Antonio Bay/Hynes Bay/Guadalupe Bay ...	530
Segment 2463: Mesquite Bay/Carlos Bay/Ayres Bay	534
Segment 2471: Aransas Bay	538
Segment 2472: Copano Bay/Port Bay/Mission Bay	541
Segment 2473: St. Charles Bay	544
Segment 2481: Corpus Christi Bay	548
Segment 2482: Nueces Bay	564
Segment 2483: Redfish Bay	568
Segment 2484: Coprus Christi Inner Harbor	572
Segment 2485: Oso Bay	588
Segment 2491: Laguna Madre	593
Segment 2492: Baffin Bay/Alazan Bay/Cayo del Grullo/ Laguna Salada	598
Segment 2493: South Bay	601
Segment 2494: Brownsville Ship Channel	603

TABLE OF CONTENTS CONTINUED

VOLUME 4

	Page
Gulf of Mexico	609
Segment 2501 Gulf of Mexico	611



Bays

SEGMENT 2471 OF THE BAYS AND ESTUARIES

NAME: Aransas Bay

DESCRIPTION:

LENGTH/SURFACE AREA: 87.8 square miles (227.4 square kilometers)

SEGMENT CLASSIFICATION: Effluent Limited

DESIGNATED WATER USES: Contact Recreation
Exceptional Aquatic Life
Oyster Waters

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 14 OFF SEGMENT: 0

PUBLISHED STUDIES: None

AMBIENT TOXICITY MONITORING STATIONS: None

SUMMARY OF FISH KILLS: None

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	2 outfalls	2.54 MGD
Industrial	0 outfalls	0.00 MGD
Agricultural	0 outfalls	0.00 MGD
Total	2 outfalls	2.54 MGD

SEGMENT SUMMARY:

Water quality of Aransas Bay is good.

51 012

SEGMENT 2481 OF THE BAYS AND ESTUARIES

NAME: Corpus Christi Bay

DESCRIPTION:

LENGTH/SURFACE AREA: 123.1 square miles (318.8 square kilometers)

SEGMENT CLASSIFICATION: Water Quality Limited
Cause: Water Quality Standards Violations

DESIGNATED WATER USES: Contact Recreation
Exceptional Aquatic Life
Oyster Waters

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 17 OFF SEGMENT: 0

PUBLISHED STUDIES: 01 Sep 1981 F,C,W,T,S IS-63 (Davis: Jul 1984)
23 Jun 1987 F,C,W,T,S,I,N LP-89-07 (Davis: Dec 1989)

AMBIENT TOXICITY MONITORING STATIONS: None

SUMMARY OF FISH KILLS: None

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	7 outfalls	4.84 MGD
Industrial	7 outfalls	6.84 MGD
Agricultural	0 outfalls	0.00 MGD
Total	14 outfalls	11.68 MGD

SEGMENT SUMMARY:

The exceptional aquatic life use is partially supported due to depressed dissolved oxygen levels in the Corpus Christi Channel. Due to elevated fecal coliform densities, the oyster waters use is not supported in an isolated area near the mouth of Oso Bay. The oyster waters use is partially supported in a larger area along the southwestern side of the bay. Time, extent, and area of actual shellfish closures are based on criteria administered by the Texas Department of Health. Arsenic, barium, and zinc levels in sediment are elevated.

SEGMENT 2482 OF THE BAYS AND ESTUARIES

NAME: Nueces Bay

DESCRIPTION:

LENGTH/SURFACE AREA: 28.9 square miles (74.9 square kilometers)

SEGMENT CLASSIFICATION: Water Quality Limited
Cause: Water Quality Standards Violations

DESIGNATED WATER USES: Contact Recreation
Exceptional Aquatic Life
Oyster Waters

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 12 OFF SEGMENT: 0

PUBLISHED STUDIES: 12 Apr 1976 F,C,W,S,T,I,N,P,B IMS-66 (Bowman/Jensen: Nov 1977)

AMBIENT TOXICITY MONITORING STATIONS: None

SUMMARY OF FISH KILLS: None

Water Body	Date	Cause	Size of Kill
South Shore	09/19/90	Low dissolved oxygen	200

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	2 outfalls	2.51 MGD
Industrial	3 outfalls	500.00 MGD
Agricultural	0 outfalls	0.00 MGD
Total	5 outfalls	502.51 MGD

SEGMENT SUMMARY:

Due to elevated fecal coliform densities, the oyster waters use is not supported in an isolated area near White's Point and is only partially supported throughout most of the rest of the bay. Cadmium and zinc levels in sediment are elevated.

SEGMENT 2483 OF THE BAYS AND ESTUARIES

NAME: Redfish Bay

DESCRIPTION:

LENGTH/SURFACE AREA: 28.8 square miles (74.6 square kilometers)

SEGMENT CLASSIFICATION: Effluent Limited

DESIGNATED WATER USES: Contact Recreation
Exceptional Aquatic Life
Oyster Waters

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 1 OFF SEGMENT: 2

PUBLISHED STUDIES: 30 Mar 1984 F,C,S,I LP-86-10 (Bowman/Jensen: Nov 1986)
Conn Brown Harbor

AMBIENT TOXICITY MONITORING STATIONS: None

SUMMARY OF FISH KILLS: None

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	2 outfalls	1.60 MGD
Industrial	5 outfalls	300.01 MGD
Agricultural	0 outfalls	0.00 MGD
Total	7 outfalls	301.61 MGD

SEGMENT SUMMARY:

Water quality of Redfish Bay is good.

SEGMENT 2484 OF THE BAYS AND ESTUARIES

NAME: Corpus Christi Inner Harbor

DESCRIPTION: from US 181 to Viola Turning Basin

LENGTH/SURFACE AREA: 0.7 square miles (1.8 square kilometers)

SEGMENT CLASSIFICATION: Water Quality Limited
Cause: Water Quality Standards Violations

DESIGNATED WATER USES: Noncontact Recreation
Intermediate Aquatic Life

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 3 OFF SEGMENT: 0

PUBLISHED STUDIES: 01 Sep 1981 F,C,W,T,S IS-63 (Davis: Jul 1984)
08 Aug 1982 B,C,F,I,S,W LP-197 (Bowman and Jensen: Jan 1985)
25 Jun 1987 F,C,W,T,S LP-89-07 (Davis: Dec 1989)

AMBIENT TOXICITY MONITORING STATIONS:

ON SEGMENT: 2

OFF SEGMENT: 0

SUMMARY OF FISH KILLS: 1

Water Body	Date	Cause	Size of Kill
Corpus Christi Ship Channel	09/04/90	Low dissolved oxygen	11-100

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	1 outfall	10.00 MGD
Industrial	29 outfalls	47.23 MGD
Agricultural	0 outfalls	0.00 MGD
Total	30 outfalls	57.23 MGD

SEGMENT SUMMARY:

The aquatic life use is not supported, as the mean dissolved copper concentration exceeds the chronic criterion. Depressed dissolved oxygen levels in the Avery and Viola Turning Basins cause partial support of the intermediate aquatic life use. Cadmium, copper, lead, mercury, and zinc levels in sediment and PCBs and selenium in whole fish tissue are elevated in Corpus Christi Inner Harbor.

SEGMENT 2501 OF THE GULF OF MEXICO

NAME: Gulf of Mexico

DESCRIPTION: from the Gulf shoreline to the limit of Texas' jurisdiction between Sabine Pass and the Rio Grande

LENGTH/SURFACE AREA: 3,879 square miles (10,046 square kilometers)

SEGMENT CLASSIFICATION: Water Quality Limited
Cause: Water Quality Standard Violations

DESIGNATED WATER USES: Contact Recreation
Exceptional Aquatic Life
Oyster Waters

USE ATTAINABILITY ANALYSIS: None

STATIONS MONITORED IN THE LAST FOUR YEARS ON SEGMENT: 8 OFF SEGMENT: 0

PUBLISHED STUDIES: None

AMBIENT TOXICITY MONITORING STATIONS: None

SUMMARY OF FISH KILLS: None

FISH CONSUMPTION ADVISORIES AND/OR CLOSURES: None

PERMITTED FACILITIES (FINAL):

Domestic	3 outfalls	0.04 MGD
Industrial	1 outfall	0.00 MGD
Total	4 outfalls	0.04 MGD

SEGMENT SUMMARY:

Due to elevated fecal coliform levels, the oyster waters use is not supported near Sabine Pass, Point Bolivar, and San Luis Pass. Time, extent, and area of actual shellfish closures are based on criteria administered by the Texas Department of Health. Chlorophyll *a* levels are elevated near Point Bolivar. Silver levels in sediment are elevated near the end of south jetty at Port Aransas.

51 017